

or all of the elongated cavities 112, 124, 126, 136, 138, 148, 150 may be filled with an appropriate light-weight filler material such as, but not by way of limitation, a foamed plastic, a wood material, a wood composite material or an inflatable bladder to aid in the strength and/or manufacturing of the metal sports board 110. The large number of elongated cavity-forming sections 112, 124, 126, 136, 138, 148, 150 improve the strength of the metal sports board 110 without adding significantly to the weight of the board 110. The improved strength is provided mainly by the longitudinally elongated generally vertical support walls 120, 122, 132, 134, 144, 146, 156, 158. Generally, the number of elongated hollow sections in the metal sports board is N-1, where N is the number of longitudinally elongated support walls.

It will be readily appreciated by those skilled in the art that in a further embodiment of the invention, the metal sports board may include a number of adjacent longitudinally elongated hollow sections and support walls not shown and described herein.

The metal sports board of the present invention is preferably manufactured by extruding an elongated metal board made of an aluminum alloy to have one or more longitudinally elongated cavity-forming sections. Preferably, the metal sports board has the three longitudinally elongated cavity-forming sections as discussed above with respect to FIGS. 9-11. Although the metal sports board is preferably made of aluminum, other metal materials such as, but not by way of limitation, a titanium alloy may be used. The aluminum alloy preferably used is either a 6061 alloy or a 6005 alloy in the 6000 series of this alloy. Of course, other alloys may be used.

If a 6061 alloy is used, the method of manufacture preferably includes extruding the elongated metal board, annealing or softening the metal board to less than a T-5 hardness condition, preferably a T-0 tempered hardness condition (e.g., spraying the metal board with water within a few seconds after the metal board comes out of the mold), bending or shaping the metal board, and hardening the metal board so as to retain the desired shape by a heat treatment process to at least a T-5 tempered hardness condition (e.g., solution aging the metal board for approximately 8 hours at 350 degrees).

If a 6005 alloy is used, the annealing process described above is not required because after the extrusion step, the metal board is at a T-4 tempered hardness condition. The method further includes shaping the metal board, and hardening the metal board by a heat treatment process to at least a T-5 tempered hardness condition. If the metal sports board is to be used as a skateboard, the board is preferably shaped by bending the front and rear portions of the metal sports board to a predetermined angle so that a bent-up tip portion and a bent-up rear tip portion are formed. Obtaining the desired shape of the front and rear parts may also involve machining the front and rear parts of the metal board into a predetermined shape.

In summary, the novel method of manufacturing a metal sports board includes providing the metal sports board, e.g., extruding the board, annealing or softening the metal sports board to inhibit stress formation or cracking in the board, shaping the board, and hardening the board to retain its shape, e.g., heat treatment process. The metal sports board is preferably annealed to less than a T-5 hardness condition before shaping the board and hardened to at least a T-5 hardness condition. As discussed above, if the metal sports board is initially provided in a sufficient soft condition, less than a T-5 hardness, the annealing step may not be used. By

not shaping the metal sports board while it is in a hard condition, e.g., a T-6 condition, the method of the present invention inhibits cracking and breaking of the board over time, allowing the rider to ride the sports board hard without worrying about the board bending or breaking.

Although the step of providing an elongated metal board preferably includes extruding the elongated metal board, other manufacturing processes besides extruding may be used to manufacture the metal sports board. For example, the metal sports board may be manufactured by bending a single piece of aluminum or other metal to the desired shape. Alternatively, a separate top sports board member and bottom sports board member may be manufactured and affixed together so as to form a metal sports board having one or more longitudinally elongated cavity-forming sections. For example, the top sports board member and the bottom sports board member may each be separate pieces of aluminum that are bent to a desired shape and welded together. Alternatively, the separate members could be extruded separately and welded together to form the metal sports board. Alternatively, the one or more longitudinally elongated cavity-forming sections may be formed by casting or extruding the metal sports board with a fluid filled air bladder on the inside and removing the bladder after forming the metal sports board. Other light-weight filler materials such as, but not by way of limitation, foam, wood, or wood composite in the shape of the longitudinally elongated cavity may be used to assist in creating the one or more longitudinally elongated cavity-forming sections. These light-weight filler materials may also help to reduce the weight of the metal sports board while increasing the strength of the sports board. Using an air bladder or other filler material also allows longitudinally elongated cavity-forming sections to be shorter than the full length of the board to be formed.

It should be noted, the type of metal sports manufactured, e.g., skateboard, snowboard, wakeboard, dictates how the board will be manufactured. For example, if the metal sports board is intended for use as a wakeboard or snowboard, the metal sports board will be shaped differently than that shown and described above.

While the particular invention as herein shown and disclosed in detail is fully capable of obtaining the objects and providing the advantages stated, it is to be understood that this disclosure is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended other than as described in the appended claims.

What is claimed is:

1. A skateboard that is adapted to be ridden by a user standing upon it, comprising: an elongated extruded aluminum metal board; said metal board having a front end, a rear end, a top surface, a bottom surface, a left edge, a right edge, a width adapted to accommodate the user's feet in a direction generally perpendicular to the longitudinal axis of the board, and multiple continuous, closed cavity forming members extending substantially the length of the board, at least one of the cavity forming members having a height H1 and a width W2 and W2 is greater than H1.

2. A skateboard as recited in claim 1, wherein said at least one cavity forming member having a height H1 and a width W2 has a substantially rectangular cross-sectional configuration.

3. A skateboard as recited in claim 1, wherein said metal board has an arcuate shaped front end and an arcuate shaped rear end.

4. A skateboard as recited in claim 3, wherein plastic end guards are secured to said front and rear ends of said metal board.

11

5. A skateboard as recited in claim 1, wherein said top surface of said metal board has a concave transverse contour.

6. A skateboard as recited in claim 1, wherein said metal board has a bent-up front tip portion and a bent-up rear tip portion.

7. A skateboard as recited in claim 1, further comprising front and rear skateboard trucks secured to said bottom surface of said metal board.

8. A skateboard as recited in claim 1, wherein said board deflects less than 0.162 in. with a load of 200 lbs.

9. A skateboard as recited in claim 1, wherein said board deflects less than 0.203 in. with a load of 250 lbs.

10. A skateboard as recited in claim 1, wherein the elongated metal board includes a top wall, a bottom wall and N longitudinally elongated support walls that define N-1 longitudinally elongated cavity forming members extending substantially the length of the board

11. A skateboard as recited in claim 1, wherein end guards are secured to said front and rear ends of said metal board at said multiple continuous, closed cavity forming members.

12

12. A skateboard as recited in claim 1, wherein at least one of said multiple continuous, closed cavity forming members includes a filler.

13. A skateboard as recited in claim 12, wherein said filler is a member selected from the group consisting of foam, foam plastic, wood, wood composite, and an inflatable bladder.

14. A skateboard as recited in claim 1, wherein said metal board includes a first, central longitudinally elongated cavity forming section having a generally rectangular cross section, second and third adjacent longitudinally elongated cavity forming sections having generally rectangular cross sections that are narrower than the cross section of the first section, fourth and fifth adjacent longitudinally elongated cavity forming sections having generally rectangular cross sections of approximately the same cross section as the cross section of the first section, and sixth and seventh adjacent longitudinally elongated cavity forming sections having generally rectangular cross sections of approximately the same cross section as the cross section of the first section.

* * * * *